

DIRT & MUD

Spring 2004

Calories In

But Are They Coming Out?

For about two-thirds of Americans the answer is...no, not at the same rate they are going in. Simple math underlies the truth of what our eyes see...Americans are overweight and burdened with chronic disease associated with this "new" medical problem. Being overweight is now getting the recognition it deserves, as both a health risk and a tremendous financial burden for our health care system.

It is not surprising that as physical education programs in secondary schools have lost funding through the years and disappeared; as electronics have replaced physical movement as sources for recreation for both children and adults; as "supersize" portions and standard food servings increased; and as our jobs require less physical movement, we are in a health crisis today.

It is refreshing, therefore, that we in the Pentagon are an "oasis" in this environment of nutritional pathology and physical malaise. It is a blessing that our cars are parked so far from our building forcing us to walk a considerable distance. We should be happy that we have to climb those 36 steps leading up to the new North Parking crosswalk. The South Parking folks have had this privilege for a couple of years. When combined with the folks coming to work from the Metro, our Pentagon workforce in its entirety must negotiate steps to get to work, and that is a good thing.

We must walk long distances here to get from one place to another. We have a center courtyard, which

attracts many walkers. Although the rings in the Pentagon may no longer be contiguous, one still can walk each ring a certain distance and then incorporate some stairs to use. As the Pentagon converts to escalators, do not rest on it but use the opportunity to walk up, as it is moving.

The point in all of this is that we must take advantage of our opportunities to move and to do so as much as we can. The more we can move, the more calories we will use. It is the accumulation of little tasks that can add a big chunk to this equation. For example, rather than pushing the lever that automatically opens the door, or walking through the door that is already opened, opt to push the door open and walk through it. You will burn more calories and benefit from some weight resistance for your shoulders, arms and chest by doing so.

The new Pentagon Athletic Center is a temple to physical activity. We now have a facility that supports the seriousness of our mission to be fit and healthy. For active duty the reasons to be conditioned are obvious. For civilians you have a world-class fitness facility and a world-class health promotion program (Fit To Win) to assist and partner with you. It is your challenge that while you are working

here at the Pentagon you prepare yourselves for the next phase of your life...a vigorous and robust retirement!

The Pentagon encompasses a culture promoting physical activity. It has provided this culture since its inception. Only recently has the corporate world understood this and are just now beginning to make some strides in this area. Our ability to adapt to new and healthy behaviors is enhanced by the environment in which we live and work. Our chances of succeeding in adapting and embracing a more physically active and fit life are increased in this positive work-place environment here at the Pentagon.

This problem pervading the country starts with each of us. The more you know what your options are, the better your chances for success. This is where the Fit To Win program and the Pentagon Athletic Center can partner with you to plan your program and to get you going. If you are already working out regularly, allow us to take you to the next level. Together Fit To Win and the Pentagon Athletic Center can help you to change the emphasis of this equation so that you will have more calories going out than coming in!

Inside This Issue

- 1 Exercise Fuel**
 - 2 Exercising Your Endothelium**
 - 3 Shoe and Gait**
 - 4 Blood Pressure and Running**
 - 5 Fluid Replacement**
-

Spring into Running

By
Shari Tomasetti

If you like to run outside only when it is warm - then this article is for you! There are those that hate to run on a treadmill and hate to run in the cold weather and some that don't do a thing for exercise in the winter. If one of these situations sounds like you, then you need to begin a spring running program very conservatively. This is also age dependent.

We begin to lose about one percent muscle tone per year after the age of thirty. Therefore, if you are not doing lower body weight training on a regular basis and you are over the age of thirty your joints are absorbing the shock that your muscles used to absorb. Running and lower body lifting should **both** be a priority. Your muscles also provide power for movement.

If you haven't done a thing until the spring, then starting a lower body weight-training program is a good idea before beginning to run outdoors. This will help keep you away from knee pain, absorb shock, and increase endurance. A lower body weight-training program should consist minimally of leg extensions, leg curls, and the leg press or wall squats. The quadricep muscle for a runner is usually weak and needs to be stronger than the hamstring.

Your lower body weight-training program can be performed one to three times a week. The exercises should be performed two to three times (sets) with 12-15 repetitions. After about two weeks, you may begin to run. When you begin to start a running program after the age of 30, you usually cannot start running like you did when you were younger. A run program should consist of a run/walk (see end of the article for some examples on running programs).

If you run on a treadmill throughout the winter and have decided to begin to run outdoors, try not to go from running every time on a treadmill to every time outside, especially not on hard pavements such as cement. The treadmill absorbs more shock than cement and your body needs to build up strength to adhere to different running conditions. This also goes for trail running. Trails are usually hard

for your feet to adjust; therefore you are constantly using the muscles in your feet and legs to adjust to different terrains.

If you try to run on trails everyday when you have been running on a treadmill, you may encounter some overtraining symptoms such as fatigue in the muscle, tightness, pain, inflammation, or other inhibiting problems. So, to keep you running throughout the spring and summer make sure you are careful not to do too much, too fast, too soon... even if you have been running on a treadmill all winter.

Running on a treadmill also changes your running gait a little; you will have a tendency to run on your toes more when you run on a treadmill and your center of gravity changes. If you are ready to run outside and don't normally use an incline when running on a treadmill, try to increase the elevation one to two percent, this simulates running outdoors. You can also choose the random mode on any treadmill and pick a level that allows you to stay between those incline percentages of one and two. Make sure you don't do this everyday. You can incorporate the incline into your routine once for a week and see how you feel. The next week add another day, and then once you get up to three times a week try to go outside for a run.

Sometimes the first run may need to be a run/walk depending on the amount and level of hills in your area. Be careful not to over do it and don't be discouraged if you can't make it as far as you can when running on a treadmill. One way to train for hill running is to do intervals on the treadmill with hills. Just like incorporating incline into your training, you should incorporate hills in once a week and maybe only do four the first time after a warm-up for five to ten minutes. Make sure you stretch well after your warm-up, holding your stretches for thirty seconds then begin with a light jog for a minute, then move the incline up to three or four percent for a minute. You may need to walk the inclines at first, but stay with it and you will eventually be able to run them.

Outdoor Running Program for Current Treadmill Runners:

DIRT & MUD

This program can consist of different types of runs, including weight training on a regular basis. You should always start with a five-ten minute warm-up. A warm-up consists of elevating the heart rate to about thirty to fifty percent of your heart rate reserve. To get to your warm-up zone take $220 - \text{AGE} = \text{A}$, then multiply A by .30 and .50. Once you retrieve that number you add your resting heart rate back in.

Your long slow runs should be between fifty-five and seventy-five percent of heart rate reserve (see formula above), just substitute the percentages into the formula to find your heart rate zones. Your moderate length runs (usually thirty to forty minutes) should be done between seventy-five and eighty-five percent of your heart rate reserve. Your speed training or intervals should be done at a percentage greater than eighty-five of your heart rate reserve. This formula takes into account everyone as an individual instead of the generic maximum heart rate equation of $220 - \text{age}$.

Week 1: Depending on how many days you run on a treadmill, substitute one of those days for running outdoors about the same distance or time as your usual treadmill runs.

If your treadmill runs are done without an incline, the outdoor run may be pretty hard. If you run with an incline you can incorporate two days of outdoor running and see how you feel.

Week 2: Add one to two more days of outdoor running if no pain or soreness was experienced the week prior.

Week 3: You should be able to run outdoors for all of your runs and if no soreness or pain was experienced then increasing your mileage or intensity is okay for one of your runs.

Week 4: This week begin to add interval training. Interval training should consist of a five to ten minute warm-up, a good stretch and then intervals of thirty to sixty seconds on and off. Your heart rate should be between greater than eighty-five percent of your heart rate reserve and then back down from fifty-five to sixty-five

3

percent of heart rate reserve. If you are just beginning to add intervals do only four, adding one more each week until you get to ten.

Intervals/Speed workouts:

Once you get to ten intervals, try to increase the length of a few of your intervals or the speed of them.

If You Are Beginning a Running Program Outdoors:

Week 1: Walk for five to ten minutes, jog for one, walk for five minutes, jog for one, walk for five minutes, jog for one, end with a five minute walk and then stretch!

This can be done two to three times the first week. Depending on how you feel after the first time, you will judge if you can handle two or three times in the first week.

Week 2: Decrease the time between walking and jogging. Warm-up (walk for five to ten minutes), then jog for a minute, walk for four, jog for one, walk for four, jog for one, walk for 5 as a cool down.

This will also be done two to three times per week depending on your fitness comfort level.

Week 3: Follow the same pattern. Warm-up five minutes, jog for one minute, walk for two to three. Do this three times. If comfortable add one more jog/walk session.

Week 4: Same pattern. Warm-up, then jog for one minute and walk for one to two minutes. Do this to add up to twenty-five or thirty minutes.

As the weeks progress lengthen the jog time and keep the walk time short. When you feel comfortable jogging for fifteen to twenty minutes you can start adding an increase in frequency, intensity, or length of time. Only choose one of those variables once per week to increase conservatively! Always stretch when you are done running/walking!

Also see web sites:
www.runnersworld.com/home

www.coolrunning.com

www.runningplanet.com

Lowering Blood Pressure with Aerobic Activity

By
Kaye Piper

The single biggest factor responsible for heart disease and stroke in the United States may be high blood pressure. This disease is estimated to affect 15% of the adult population.

What is high blood pressure? Blood pressure is the force of the blood against the walls of the arteries. It can rise and fall during the course of the day. When it stays elevated over time it is called high blood pressure or hypertension.

What causes it? Most often the cause is unknown. Some conditions causing increased pressure on the artery walls are; narrowing of the arteries, greater than normal volume of blood, or the heart beating more forcefully than it normally should.

Who is at risk? It is more common in African – Americans than Caucasians. Others at risk are the overweight, those with a family history of hypertension, and those with a high normal reading or pre-hypertension (130-139/85-89 mm Hg)

What are the dangers? High blood pressure forces the heart to work too hard. It hardens the artery walls and increases the risk for heart disease and stroke. Hypertension can also cause heart failure, kidney disease and blindness.

How do I know if I have it? Hypertension most often has no warning signs or symptoms. The only way to find out is to have your blood pressure taken with the familiar cuff from your healthcare provider. Several readings over a two week period resulting in the averages of 140/90 or greater will indicate high blood pressure.

What can I do about it? Several studies have demonstrated that

DIRT & MUD

moderate aerobic exercise is instrumental in lowering blood pressure. In fact lack of regular exercise increases by 50% your chances of developing hypertension. Prior to starting an exercise program you will want to see your healthcare provider. This is especially important if you are male over 45 or female over 55, have been sedentary, smoke or have a medical problem such as hypertension, it is advisable to check with your provider first. After you have done this, come to see us in Fit To Win to take our Personal Wellness Profile. Following this, have a fitness evaluation from our exercise physiologist who can set you up with a fitness program.

How does aerobic exercise lower my blood pressure? Aerobic exercise uses oxygen to produce energy involving repetitive movements of the large muscles of the arms and legs. According to Richard D. Moore, M.D., Ph.D. in his book, The High Blood Pressure Solution, "Regular aerobic exercise increases the number of mitochondria or 'powerhouses of the cell' (tiny membrane sacks within the cell that contain special proteins that combine oxygen with food products to provide energy to the cell), which allows your body to increase the percent of energy you can get aerobically. Therefore, your body places less reliance on the more inefficient anaerobic (without oxygen) metabolism and is more resistant to fatigue."p.187.

Your blood pressure will increase when you begin exercising. As your body starts to warm up the tiny blood vessels in your muscles open enabling an easier flow of blood resulting in less strain on your heart and hence your blood pressure begins to drop and can eventually remain there for several hours after you have finished your workout.

Some words of caution.

1. Be sure to warm up slowly for 10 min. at the start of your workout. This is what allows the above information to happen.
2. Current evidence shows that to lower your blood pressure 2 ¼ - 2 ½ hours per week are

needed for aerobic exercise. This should be broken up into about 5-6 sessions. The probability is that this will be enough to maintain normal weight and blood pressure.

3. The cool-down at the end of your workout is also important. This allows the blood from your muscles to get back into your circulation. This should last 3-5 min.
4. Pay attention to what your body is telling you. Take your pulse and stay in your target heart range – 220-age times 60%. Signs you are overdoing it; your resting pulse is higher than usual, lack of energy for other activities, trouble sleeping, aches and pains that don't go away. Also, during your workout you should be able to carry on a conversation.
5. **If you are taking anti-hypertensive medications** begin exercising very slowly. Speak with your provider about the drugs you are taking. If you are taking a beta blocker it will prevent your heart rate from rising as much as normal and may limit your exercise capacity. Keep your sessions under 30 min. but at least 5 times per week.

References; *Moore, Richard D., M.D., Ph.D. The High Blood Pressure Solution, Healing Hearts Press, 2001.*

Running Shoes and Running Gait

By
Shari Tomasetti

Do you pick what looks good? Do you use magazines or online informative guidelines? Have you heard of the Wet footprint test? Better yet, did you ever have a knowledgeable professional analyze your running gait? This article is designed to inform you on the best method to pick your running shoe.

Let's begin with the definition of running gait: the kinematics (movement) of the lower extremity throughout the phases of running. This is different than walking gait. Your body places more stress on the joints when you are running; therefore the same movement will be causing a greater misalignment (if present) at the joints than when walking. Running in the proper shoes can keep you injury free or even decrease injuries and pains experienced during running. It is important to support your feet properly so they can support your body.

So let's look at the methods used to determine which running shoes are right for you. First, the most efficient way to determine this is to have your gait analyzed while running by a trained professional. The method used is digital or video observational gait analysis. You run barefoot on a treadmill while the medical professional videotapes you.

The diagnosis will be made after reviewing the video in slow motion and then a type of running shoe will be recommended. Other techniques medical professionals will use to analyze your gait are watching you run, walk, or stand. These are not as accurate, but better than the other methods discussed in the next paragraph.

The Wet footprint test, typically a military process, and magazine guidelines will examine your arch height to recommend running shoes. Using your arch height to determine which running shoe is right for you is not a correct method. These are based on the idea that the higher your arch, the more rigid your foot is and the more flexible the shoe should be to absorb shock - or the lower your arch, the more flexible your foot is and the more rigid the shoe should be.

These tests are better than guessing, but being in the field for years, I have examined plenty of runners with high arches who pronate (misalignment at the subtalar joint) during the phases of running, which would mean that they need a rigid shoe. Arch height will tell you what shape of shoe you need to run in. Of course this method will be a closer guess than just buying a shoe because it is on sale. If you want to prevent or decrease running injuries and pain, you should

DIRT & MUD

seek a professional examination. Professional examinations can be done by a Physical Therapist, Biomechanic Physiologist, or another trained medical professional. The Running Shoe Clinic is available for all government and active duty personal in or associated with the Pentagon. This service is free and located in the Wellness section of the DiLorenzo TRICARE Health Clinic.

By now you probably realize that picking a running shoe because it looks cool is not doing much to prevent injuries or pain while running, I hope? One last thing, you should never run in a cross trainer. These shoes are made to allow for lateral movement, which is the last thing you want when you are running.

Fueling Your Body

By

Dave Holes

There is so much debate regarding proper nutrition, performance, weight loss and health. Is it best to follow low or no-carbohydrate diets or is the low fat, high carbohydrate diet the better way to go? With so much bickering among researchers, it has caused so many people confusion on what is the best way to eat. Furthermore, we are overwhelmed with a myriad of choices in regards to supplements. Which ones to use, when to use them and what to avoid, are common questions we all ask medical providers and ourselves.

Although both diet and supplementation are open to debate regarding weight loss issues, there is strong scientific evidence on how to eat for improving athletic performance. Not surprisingly, many of these principles are the same for individuals interested in decreasing body fat and improving their health.

Carbohydrates are the body's energy source. Carbohydrates are broken down twice as fast as fat to provide energy. Numerous research studies have shown that endurance decreases dramatically when carbohydrates are depleted from the diet. If you do not consume carbohydrates or are on a low carbohydrate diet (20 grams is extremely low), your body will not have the carbohydrate reserves to

function at an optimal level. Fatigue is closely linked with the amount of carbohydrate you have stored in the muscle prior to exercise. Low carbohydrate diets do not allow for saturation of these carbohydrates stores thereby leading to fatigue and decreased performance.

You might ask what is the appropriate amount of carbohydrate that you need to function at an optimal level. Essentially, the amount of carbohydrate is linked to your training status, length of training session and lean body mass. The longer your training session and the greater the lean muscle mass, the greater the amount of carbohydrate needed to fuel your muscles. Remember it is the lean muscle mass that is important here since that is where carbohydrate is stored. Thus, two individuals who weigh the same but have different amount of body fat will have different requirements for carbohydrate intake. Dr. Michael Colgan's *Optimal Sports Nutrition*, is an excellent guide to figure your carbohydrate intake. He suggests consuming approximately 1.5-2 times your body weight in carbohydrates for every hour of activity that you perform. Thus, a 150 lb athlete training two hours per day would consume between 450-600 grams of carbohydrate. (1)

Now that you know your total of carbohydrates to consume on a daily basis, we have to discuss what type of carbohydrates and when to take them. Research suggests that the best time to consume carbohydrates is immediately following exercise. The reason for this is that the enzyme responsible for carbohydrate storage in muscle, glycogen synthase, is very active post exercise. After 4-6 hours the activity of this enzyme decreases and carbohydrate synthesis is not as rapid. It is also more effective in consuming carbohydrate in liquid form preferably as glucose polymers or maltodextrin. (1) Immediately post exercise, the carbohydrate can consist of simple sugars as found in sports drinks since exercise diminishes the insulin response. Dr. Colgan suggests consuming 225 grams of carbohydrate in liquid form within 2 hours of completing your exercise session. (1) If your exercise session exceeds 60 minutes or is performed in high temperatures, consuming a

carbohydrate sports drink during exercise can be very beneficial.

Sports drinks allow for rapid intake of carbohydrate into the muscle for energy. For best absorption, the drink should be between 5-10% carbohydrate listed as glucose polymers or maltodextrin. Watch out for fructose in sports drinks. Fructose draws water into the intestines leading to cramping and diarrhea.

To properly increase your carbohydrate stores it is essential that your diet consist of complex carbohydrates from nonrefined carbohydrates. Whole grains including brown rice, buckwheat, quinoa, bulgar wheat, barley, and rolled oats are essential for any athlete. Beans including kidney, chick peas, lima and black beans are also excellent carbohydrate and protein sources. Your diet also should consist of 8-12 servings of vegetables and fruits per day. Protein and carbohydrates should be consumed in small meals throughout the day. Try to consume 150-225 grams of carbohydrate within 2 hours post exercise. (1) Then spread out the remainder of the carbohydrates in approximately equal portions. If your intake is 400 grams per day and you consume 200 post exercise that leaves 200 grams to be spread out among 5-7 meals. That would equate to approximately 30-40 grams of carbohydrate per meal. In addition, each meal should consist of 15-30 grams of protein depending on lean body mass and activity level.

Remember, if you want a championship body then you have to eat like a champion. Most people do not achieve the look they desire or reach their performance goals, not because of their exercise program, but because of their nutritional deficiencies. So eat smart, train hard and realize your true potential.

References:

1. Colgan, Michael Dr. *Optimal Sports Nutrition*, Advanced Research Press, 1993

Exercising Your Endothelium

?

By

Dave Holes

DIRT & MUD

We all know that exercise and eating well is beneficial to our health. The research behind it is indisputable. Unfortunately, most people are so focused in on weight loss that they overlook the positive health benefits of exercise. The Cooper Institute in Dallas, TX has produced some breakthrough studies demonstrating the importance of fitness. Their research suggests that individuals who have normal levels of body fat yet are sedentary are at least at twice the risk for developing chronic disease than someone who is actually overfat but physically fit.

The test used to determine fitness at the Cooper Institute is a treadmill walk test where patients walk at a constant speed of 3.3 mph and then increase the grade by 1% every minute. Total time on the treadmill is measured. Individuals who score in the VERY POOR bracket are considered to be at least 8 times at risk for chronic disease mortality than the individuals who score in the SUPERIOR bracket regardless of weight.

If you do not have any cardiovascular risk factors you can perform the same test on a treadmill. Set the treadmill to 3.3 mph and 2% grade and increase the grade 1% every minute. If you find it difficult to walk more than 10 minutes than this would indicate a very poor level of fitness that needs to be addressed. Another method you could use to measure your exercise intensity are MET levels. METS are metabolic equivalents that equate how much oxygen you are consuming to work at a given workload. Research suggests that for every MET you exercise above 6 METS, you reduce your death rate from chronic disease by 8-12%. Some machines will automatically display MET levels for you but you can also calculate them. Don't be alarmed by the formulas, they are fairly easy to work with. The following equations are for treadmill calculations taken from ACSM's 6th Annual Guidelines for Exercise Testing and Prescription.

For Speed component:

1. Multiply speed (mph) x 26.8
2. Multiply result from above by .2
3. Divide result by 3.5

6

Example: Running on treadmill at 7.0 mph at 0 incline:

1. $7.0 \text{ mph} \times 26.8 = 187.6$
2. $187.6 \times .2 = 37.52$
3. $37.52/3.5 = 10.7 \text{ METS}$

Incline running increases oxygen demand. We have to add another equation:

1. Multiply speed (mph) x 26.8 x .9 x % grade
2. Add result from speed component

Example: Running on treadmill at 7.0 mph at 2% incline:

1. $(7.0 \text{ mph} \times 26.8 \times 9) \times .02 = 3.38$
2. $37.52 + 3.38 = 40.89$
3. $40.89/3.5 = 11.6 \text{ METS}$

You can see that running at even a slight incline can dramatically increase the intensity of the exercise. Routinely running at 12 METS could reduce your risk of chronic disease mortality by as much as 72%!

You may be asking how does exercise reduce chronic disease? There are numerous mechanisms behind exercise's effects. One that is a very hot issue in cardiovascular medicine is the effect of exercise on the arteries. Remember, your arteries are not just tubes that transport blood. They can be seen as organs with different types of cells that serve a plethora of functions. The innermost layer of artery termed the "intima" has a thin layer of cells called the endothelium. This layer is only a single cell in thickness but has a very important function. These cells secrete a substance called "nitric oxide" that serves several functions. Nitric oxide causes the artery to expand in order to accommodate the increased blood flow.

Remember your physics? As vessel diameter increases in size, resistance decreases. So, nitric oxide is important in reducing blood pressure and for adjusting vessel diameter in response to plaque formation. Nitric oxide also serves a protective function. It acts like Teflon to prevent blood platelets from sticking to diseased areas. Plaque formation that leads to cardiovascular disease results from

platelets and other cells sticking to damaged areas, which further increases plaque formation.

So, how does exercise affect the endothelium? Exercise increases the endothelium's production of nitric oxide. By doing so, the arteries are more elastic and less prone to inflammation, which is the key component of cardiovascular diseases. Regular aerobic exercise is the key to this continued protection. So, make sure you perform cardiovascular training as frequently as possible. Follow the MET levels listed above and with proper diet, your endothelium will thank you!

Exercise **And Fluid Replacement**

By
Lt.Col Steve Vieira

Warmer weather is almost here and with it comes higher temperatures, increased humidity and accelerated fluid use by the body. As a runner or avid exerciser, it is vital to keep yourself hydrated throughout the day to get the most out of your workout.

Your body is composed mainly of water: 60% for men and 55% for women. So what does all of this water do? It is lubricant for your joints; it aids in digestion; and it regulates internal body heat.

Dehydration occurs when there is not enough water in the body. Even just a mild dehydration of 1-2% of your body weight can decrease your energy level, increase your risk for injury, cause constipation, and/or cause you to suffer a heat illness.

On an average day, you should drink at least eight 8 oz. glasses of water...more if you are active or in a hot climate. Beverages such as water and juice are the preferred choice for your body. Drinks such as coffee, soda and alcohol should be consumed minimally because they are "diuretics", which increases urination and subsequently water loss.

It is important to maintain fluid balance within your body. Take in as much as you sweat or urinate out. This can be determined by following the guidelines established by the American College of Sports Medicine (ACSM):

- Before a high-intensity exercise

DIRT & MUD

or competition, eat a nutritionally balanced diet and drink adequate fluids 24 hours prior to the event to promote hydration.

- Drink about 17 ozs. Of fluid two hours before running or exercising to promote adequate hydration and allow time for excretion of excess ingested water.
- During exercise drink at regular intervals to replace the water lost by sweating.
- For exercise lasting longer than one hour, fluids with the proper amounts of carbohydrates and electrolytes should be drunk. ACSM advises that there is little evidence that for exercise lasting less than one hour drinks containing carbohydrates and electrolytes provide any physiological benefit or performance enhancement. Plain water is fine.
- When prolonged exercise (more than one hour) is especially intense, performance can be maintained and fatigue delayed by drinking fluids containing carbohydrates (glucose, sucrose or starches like maltodextrin.) A typical rate of consumption would be 600-1200 milliliters (about two pints) of a drink containing 4-8% carbohydrates.

- For running or exercise lasting longer than one hour, include small amounts of sodium in rehydration fluids to replace the sodium lost in sweat. A proper concentration would be 0.5% - 0.7% grams of sodium per liter of fluid. Sodium intake also promotes fluid retention and can prevent low sodium levels in people who drink excessive amounts of water.

If you plan to run longer than one hour remember to replenish your body by drinking beverages like Gatorade, which contain carbohydrates and electrolytes. If you prefer plain water, you can replace the lost nutrients by eating sport's gels, fresh and dried fruits, pretzels, Fig Newtons etc. Experiment to find out what works best for you.

Keep these guidelines in mind all year long to maintain a high level of conditioning. Remember, that exercise performance is at its best when you are properly hydrated.

References:

1. *Convertino, V., Armstrong, L., Coyle, E., Mack, G., Sawka, M., Senay, L., & Sherman, M (1996.) Exercise and Fluid Replacement. Medicine Science Sports Exercise, 28 (1); I-vii.*

2. *Goodwin, William. Exercise and Fluid Replacement. Online: <http://content.health.msn.com/content/article/3482.103>*

3. *Somer, Elizabeth. Refilling the Tank:*

Online:

http://health.excite.com/question_and_answer/article/1671.50514

4. **Medical Library: Medical Encyclopedia. Water in diet, General Information.**
Online:
http://health.excite.com/encyo_content/asset/adam_nutrition_h2o.

Anatomy and Arches

Running shoe manufacturers offer a variety of shoes based on your running gait. In many cases your arch height complements your running gait and shoe selection is simplified. For example if you overpronate and have a medium-low or low arch then you have two complementary factors that suggest a "stability" running shoe is correct for you. Both factors indicate that your foot is naturally good at shock absorption because the low arches are close to the surface and are very efficient at absorbing the surface force. The problem is the foot is not stable and needs those elements in the running shoe, since your anatomy has withheld that from you.

The opposite is true for those of you who underpronate (supinate.) The profile of an underpronator is a runner who has medium high-to-high arches. Consequently, your foot is quite stable but anatomically, you have inferior shock absorption. You must look to your running shoes to provide the cushioning that your high arches prevent.

The low-arched overpronator needs a stability shoe and the high-arched underpronator needs a cushioned shoe. If you have a normal arch most likely you can wear either type. But, what happens when the low arch is on the underpronator or the high arch is on the overpronator?

We see this not infrequently in the running shoe clinic. The rule for shoe selection always is dictated by your running gait. The consequence of a high-arched overpronator is the possibility of a substandard fit. Manufacturers make running shoes in the motion control category on a straight last and stability running shoes

DIRT & MUD

mostly on a medium straight last. The high arch, however, produces a quite curved foot.

On the other hand (or foot) the low-arched underpronator has a straight-shaped foot inside a mostly curved shoe. It is unfortunate that there are not at least a few shoe choices in each of these rare categories, but shoe companies cannot be cost effective producing these rare shoe selections.

Perhaps the best advice if you have this profile is to choose a semi-curved shoe if there is one available in each of these categories. The semi-curved shoe shape is designed for the normal arch and may be less restrictive to the high or low arched runner. If this does not solve the fit problem for you, contact Fit To Win for info on custom-made running shoes.

To Contact Us

If you have any questions, comments or suggestions, please contact us in one of the following ways:

Tele# 703-692-8898

Fax 703-692-6201

Mail

Fit To Win, DiLorenzo TRICARE Health Clinic, Pentagon, Corridor 8 Room MG886A.4, Washington, DC 20310-5802

E-Mail Fittowin@amedd.army.mil

Coming To FTW

All About Abs

Wed. Apr 21, 1000-1100 hrs

Fad Diets

Wed. Apr 28, 1200-1300 hrs

JP1 & JP2 Health Fair

Wed. Apr 28, 1030-1300 hrs